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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,386	04/30/2004	Ramesh NAGARAJAN	118447	3385
27074	7590	01/22/2008	EXAMINER	
OLIFF & BERRIDGE, PLC.			MOTSINGER, SEAN T	
P.O. BOX 320850			ART UNIT	PAPER NUMBER
ALEXANDRIA, VA 22320-4850			2624	
			NOTIFICATION DATE	DELIVERY MODE
			01/22/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/709,386		NAGARAJAN ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Sean Motsinger		2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8/10/2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 9-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4, 9-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

***Response to Applicants Arguments/Amendments***

1. Applicants arguments/amendments filed on 8/10/2007 have been entered and made of record.
2. Arguments with respect to the objections to the drawings, Applicants arguments have been fully considered and are not persuasive the word "planes" was not at issue the issue was only one plane is shown in the drawings for the "high spatial frequency gray scale image data" The Examiners concern is with the word "plurality", if we examine figure 1 there is the image (100) one plane for low frequency data and one plane for high frequency data there is not a plurality of planes for high spatial frequency data. An addition to the figures should show high frequency plane further divided into a plurality of planes. Note in paragraph 7 it states that only two planes are shown (one for low frequency one for high frequency). The examiner understands these planes are supported and is merely asking that more planes be shown in the drawing so the high frequency plan can be broken up into a plurality of planes.
3. Arguments with respect to the rejections under 35 U.S.C. 112 first and second paragraph have been considered but are not persuasive.

4. Applicant first argues the selector plane is supported with the specification. The examiner is not arguing that the prior art does not use a selector plane. Applicant is arguing what applicant defines as his selector plane appears to be very different from the prior art. This makes the specification and claims unclear. For example in Fan a selector plane contains only binary pixels it does not contain grey level pixels. A selector plane in the related prior art is a binary image which merely describes what plane each pixel belongs to and does not contain any image information. This is contrary to applicants disclosure where the selector plane contains the high frequency data. This creates the confusion.
5. Furthermore applicant describes the "selector plane" as being compressed with CCITT G3/G4 or JBIG while it is grey level data not binary data. These are examples of lossless compression used in facsimile applications. However, they are not applicable to grey level images as described applicant's specification. To support this assertion the examiner has provided a page from "Digital Image Processing, Gonzalez and Woods, Prentice Hall 2002 page 493" Clearly CCITT G3/G4 is a binary image compression standard. JBIG stands for Joint Bi-level (binary) image group and is also clearly a binary compression algorithm . Therefore using these compression standards to compress a grey level image is not known in the art. To support his assertion applicant provides a half toning processes which makes no mention of CCITT or JBIG. While the examiner understands if the grayscale image was converted into a halftone image it would be binary. In fact Applicant has a non

elected species leaves which the high spatial frequency data in binary format, however applicant has not elected this species. Applicant has elected the species which compresses the high spatial frequency data when it is apparently in grayscale format.

6. Regarding applicants arguments with respect to claim 1-4 and 9-14, applicant's arguments have been considered but are not persuasive. Applicant asserts that Fan and Noh do not disclose "after converting the binary image data into grayscale data" embodied in the word sequential added to the claims. The examiner disagrees for the following reason clearly Noh suggest compressing after converting to grayscale data see figure 6 element 104 note compressing it comes after undithering (converting). The examiner is substituting the compression process of Noh with that of fan therefore the segmentation and compression for fan (note segmentation is required for the compression of Fan) will clearly come after the data is converted since it is the converted data which is compressed. Therefore the addition of the word "sequential" to the claims does not overcome the examiners rejection. In applicants detailed argument applicant argues each of the references separately and does not address them together. Applicant appears to argue that each of the references separately do no contain all the elements. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of

references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

7. Applicants Arguments regarding the rejections under 35 U.S.C. 101 have been carefully considered and found persuasive due to the amendment to the claims.

### ***Objections to the Drawings***

8. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "Plurality of planes" claimed in claim 2 and claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
9. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Rejections Under 35 U.S.C. 112 1<sup>st</sup> Paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-4 and 9-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
11. Re claim 1 and 9 claims 1 and 9 contain the language "segmenting gray scale image data into a first plane having high spatial frequency gray scale image data and a second plane having low spatial frequency gray scale image data" This element was not described in the specification in such a way as to enable one skilled



in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The application describes splitting the pixels of image into two planes a low spatial frequency "background" plane and a high spatial frequency "selector" image. First the use of "selector plane" this manner is inconsistent with the relevant prior art related to this application (see use of selector plane in Fan et al. US 6,400,844 and MacLeod et al US 5,778,092.) Furthermore the specification describes the selector plane as containing grey level pixels not binary pixels. Yet the specification describes using binary compression techniques (CCITT G3/G4 or JBIG2) to compress the grey scale data. One of ordinary skill in the art would not know how to use binary compression techniques to compress grayscale image data, and would further would not understand what exactly applicants selector plane.

12. Re Claims 2-4 and 10-14, these claims are rejected because they depend from claim 1 and have the same issues as above.
13. Re Claim 2 and 10, Claims 2 and 10 contains language wherein segmenting gray scale image data includes segmenting the high spatial frequency gray scale image data into a plurality of planes based on gray scale levels of the high spatial frequency gray scale image data. Yet this is only mentioned in passing in paragraph 51 of the specification and is not described clearly in the specification. Therefore



would not be clear to one of ordinary skill in the art how to use or implement this feature nor is it described what the purpose of this feature is in the specification.

***Rejections Under 35 U.S.C. 112 2<sup>nd</sup> Paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claims 1-4, and 9-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
15. Re claims 1-4 and 9-14 These claim are unclear for the same reasons stated above in the rejections under 35 U.S.C. 112 1<sup>st</sup> paragraph above. Examiner has applied the closest relevant art to the invention as best understood.

***Rejections Under 35 U.S.C. 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1, and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Noh US 5917952 in view of Fan et al US 6400,844.
17. Re claim 1 Noh et al discloses A method for reformatting binary image data (bi – level dithered image column 2 lines 25), comprising: converting binary image data into grayscale image data (undither to create “multi-level image”);
18. Noh does not disclose segmenting gray scale image data into a first plane having high spatial frequency gray scale image data and a second plane having low spatial frequency gray scale image data; and separately compressing the high spatial frequency gray scale image data in the first plane and the low spatial frequency gray scale image data in the second plane.
19. Fan et al discloses segmenting gray scale image data into a first plane (upper plane column 5 lines 5-15 ) having high spatial frequency gray scale image data (dark sides of edges see abstract) and a second plane (lower plane column 5 lines 5-15) having low spatial frequency gray scale image data (smooth portions see abstract); and separately compressing (column 5 lines 24-30 note each can be compressed differently) the high spatial frequency gray scale image data in the first plane and the low spatial frequency gray scale image data in the second plane.

20. Re claim 9, claim 9 is claimed as any apparatus configured to perform the method of claim 1 (see rejection for claim 1.)
21. Claims 4, and 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Noh US 5917952 in view of Fan et al US 6400,844.
22. Re claim 4 Noh and Fan disclose all of the elements of claim 1, they do not disclose a computer readable medium or a modulated signal being encoded to perform the method of claim 1. However examiner is take official notice that it is well known to implement such methods in computer code and store them on a computer readable medium. The advantage would be to be able to transfer the program. Therefore it would have been obvious to one of ordinary skill in the art to combine Noh, Fan and common knowlege in the art to reach the aforementioned advantage.
23. Re claim 12 Noh and fan disclose all of the elements of claim 9 the do not disclose a marking device incorporating the apparatus of claim 9. However examiner is taking a official notice that marking devices are notoriously well known. The advantage to combine would to improve the marking device such that "economies in the resources used to store and transmit image data can be achieved by compression"

24. Re claim 13 Noh and fan disclose all of the elements of claim 9 the do not disclose a photocopier incorporating the apparatus of claim 9. However examiner is taking a official notice that photocopiers are notoriously well known. The advantage to combine would to improve the photocopier such that "economies in the resources used to store and transmit image data can be achieved by compression"
25. Re claim 14 Noh and fan disclose all of the elements of claim 9 the do not disclose a document scanner incorporating the apparatus of claim 9. However examiner is taking a official notice that document scanners are notoriously well known. The advantage to combine would to improve the document scanner such that "economies in the resources used to store and transmit image data can be achieved by compression"
26. Claims 2, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh US 5917952 in view of Fan et al US 6400,844 in further view of Lin et al US 2002/0076103
27. Re claim 2 Fan and Noh disclose all the elements of claim 1 they do not disclose wherein segmenting gray scale image data includes segmenting the high spatial frequency gray scale image data into a plurality of planes based on gray scale levels of the high spatial frequency gray scale image data.

28. Lin discloses wherein segmenting gray scale image data includes segmenting the high spatial frequency gray scale image data into a plurality of planes based on gray scale levels of the high spatial frequency gray scale image data ( see paragraph 67 note the image is further segmented into partial planes.) The motivation to combine is so that the objections can be "readily extracted" (see paragraph 67). Therefore it would have been obvious to one of ordinary skill at the time of the invention to combine Fan Noh and Lin to reach the aforementioned advantage.

29. Re claim 10, claim 10 is claimed as any apparatus configured to perform the method of claim 2 (see rejection for claim 2.)

30. Claims 3, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noh US 5917952 in view of Fan et al US 6400,844 in further view of Kodidis, Eleftherios et al. "Nonlinear Adaptive Filters For Speckle Suppression in Ultrasonic Images," Signal Processing, Signal Processing v 52 n3 August 1996, pp. 357-372.

31. Re claim 3 Noh and Fan disclose all of the elements of claim 1 they do not disclose enhancing the low spatial frequency gray scale image data in the second plane. Kodidis discloses a method of speckle reduction (See abstract, which is a method for enhancing low spatial frequency data). The motivation to combine is to suppress speckle (see abstract).

32. Re claim 11, claim 11 is claimed as any apparatus configured to perform the method of claim 3 (see rejection for claim 3.)

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Motsinger whose telephone number is 571-270-1237. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Motsinger  
01/11/2008

  
JINGGE WU  
SUPERVISORY PATENT EXAMINER